

Serial No.: 09/868,577

IN THE CLAIMS:

1.-2. (Cancelled)

3. (Currently Amended) An in-substrate selective electrochemical treatment system for finding and repairing pinholes in an active substrate comprising:

holding means for holding an insulating substrate;

an electrode for connection at a periphery of an insulating substrate being held by the holding means, to a conductive pattern located on such an insulating substrate, said electrode being covered with an insulating layer;

chemical solution confining means for confining a chemical solution to only a specified region on an insulating substrate, the specified region being smaller than an insulating substrate or slightly larger than an image displaying section on an active substrate formed on an insulating substrate;

a reversed polarity electrode plate for applying an electric charge to the chemical solution, the electric charge having polarity opposite to an electric charge of said electrode;

Serial No.: 09/868,577

chemical solution supplying and discharging means for supplying and discharging the chemical solution to and from an insulating substrate; and

means for detecting at least one pinhole in said ~~insulating~~ insulating layer comprising means for measuring the value of a current flowing between said electrode and said reversed polarity electrode plate.

4. (Previously Presented) An in-substrate selective electrochemical treatment system according to Claim 3,

wherein the reversed polarity electrode plate comprises a double-purpose reversed polarity electrode plate having a specified size and shape smaller than an insulating substrate slightly larger than the image displaying section of an active substrate formed on an insulating substrate, the double-purpose reversed polarity electrode plate also comprising the chemical solution confining means for confining the chemical solution in a gap obtained by locating the double-purpose reversed polarity electrode plate close to an insulating substrate.

Serial No.: 09/868,577

5. (Previously Presented) An in-substrate selective electrochemical treatment system according to Claim 3,

wherein the reversed polarity electrode plate is a double-purpose reversed polarity electrode plate, which is smaller than an insulating substrate, or slightly larger than the image displaying section of an active substrate formed on an insulating substrate, and which also comprises the chemical solution confining means further comprising a porous soft material plate having a surface facing an insulating substrate and impregnated with the chemical solution.

6. (Previously Presented) An in-substrate selective electrochemical treatment system according to Claim 3,

wherein the reversed polarity electrode plate has a specified size and shape smaller than an insulating substrate or slightly larger than the image displaying section of an active substrate formed on an insulating substrate; and

wherein the chemical solution confining means comprises a frame-shaped container chemical solution confining means which has, at upper and lower ends thereof, an opening slightly larger than

Serial No.: 09/868,577

the reversed polarity electrode plate having the specified size and shape and comprises a frame-shaped container in which a flexible sealing material is attached to an area around the opening at the lower end;

the treatment system further comprising pressing means for pressing the frame-shaped container chemical solution confining means against an insulating substrate, with the reverse polarity electrode plate being located within the frame-shaped container chemical solution confining means.

7. (Previously Presented) An in-substrate selective electric chemical treatment system according to Claim 3,

wherein the chemical solution confining means is a frame-shaped container chemical solution confining means for retaining the reversed polarity electrode plate therein and comprises a frame-shaped container having a flexible sealing material embedded in an open end thereof that is smaller than an insulating substrate slightly larger than the image displaying section of an active substrate formed on an insulating substrate;

Serial No.: 09/868,577

the treatment system further comprising pressing means for pressing the frame-shaped container chemical solution confining means against an insulating substrate through the sealing member.

8. (Previously Presented) An in-substrate selective electrochemical treatment system according to Claim 6, further comprising washing means for washing, with a washing liquid, the chemical solution away from a chemical solution treatment space after completion of inspection, the chemical solution treatment space comprising the frame-shaped container chemical solution confining means pressed against an insulating substrate.

9. (Previously Presented) An in-substrate selective electrochemical treatment system according to Claim 4, further comprising electrode plate temperature controlling means for controlling the temperature of the reversed polarity electrode plate by flowing temperature-controlling liquid within the reversed polarity electrode plate.

Serial No.: 09/868,577

10. (Previously Presented) An in-substrate selective electrochemical treatment system according to Claim 6, further comprising:

chemical solution circulating means for circulating the chemical solution within the chemical solution treatment space defined by the frame-shaped container chemical solution confining means or the frame-shaped container chemical solution confining means pressed against an insulating substrate; and

chemical solution temperature controlling means for controlling the temperature of the chemical solution.

11. (Currently Amended) An electrochemical treatment process for treating a substrate by use of an in-substrate selective electrochemical treatment system for finding and repairing pinholes of an active substrate, comprising holding means for holding an insulating substrate; an electrode for connection at a periphery of an insulating substrate being held by the holding means, to a conductive pattern located on such an insulating substrate, said electrode being covered with an insulating layer; chemical solution confining means for confining a chemical solution to only a

Serial No.: 09/868,577

specified region, the specified region being smaller than an insulating substrate or slightly larger than an image displaying section on an active substrate formed on an insulating substrate; a reversed polarity electrode plate for applying an electric charge to the chemical solution, the electric charge having polarity opposite to an electric charge of said electrode; and chemical solution supplying and discharging means for supplying and discharging the chemical solution to and from an insulating substrate, the treatment process comprising:

holding an insulating substrate having a conductive pattern on the holding means;

supplying a predetermined amount of a specified chemical solution to a specified region on an insulating substrate and confining the solution to the specified region;

locating the reversed polarity electrode plate close to an insulating substrate such that the reversed polarity electrode plate comes in contact with the chemical solution which is on an upper surface of an insulating substrate;

bringing the electrode into contact with a conductive pattern in the periphery of an insulating substrate;

Serial No.: 09/868,577

applying a specified direct current between said electrode and said reversed polarity electrode plate; and

measuring the value of a current flowing between said electrode and said reversed polarity electrode plate for detecting at least one pinhole in said ~~insulating~~ insulating layer.

12. (Currently Amended) An electrochemical treatment process for treating a substrate by use of an in-substrate selective electrochemical treatment system for finding and repairing pinholes of an active substrate, comprising holding means for holding an insulating substrate; an electrode for connection at a periphery of an insulating substrate being held by the holding means, to a conductive pattern located on such an insulating substrate, said electrode being covered with an insulating layer; a reversed polarity electrode plate having a specified size and shape smaller than an insulating substrate or slightly larger than an image displaying section on an active substrate formed on an insulating substrate; container chemical solution confining means comprising a frame-shaped container having, at a lower end or upper and lower ends thereof, an opening slightly larger than such a reversed



Serial No.: 09/868,577

polarity electrode plate and having a flexible sealing material attached to an area around the opening at the lower end; and pressing means for pressing the container chemical solution confining means against an insulating substrate, with the reversed polarity electrode plate being stored in the container chemical solution confining means, the treatment process comprising:

holding an insulating substrate having a conductive pattern on the holding means;

supplying a specified chemical solution to a space defined by the container chemical solution confining means and an insulating substrate;

connecting the electrode to the conductive pattern in the periphery of an insulating substrate;

applying a specified direct current between the electrode and the reversed polarity electrode plate; and

measuring the value of a current flowing between said electrode and said reversed polarity electrode plate for detecting at least one pinhole in said ~~insulating~~ insulating layer.

13.-20. (Cancelled)

Serial No.: 09/868,577

21. (Previously Presented) An in-substrate selective electrochemical treatment system according to Claim 7, further comprising fluid supply and discharge means for supplying and discharging at least one of a chemical solution, washing liquid and drying gas to and from the frame-shaped container.

22.-24. (Cancelled)